IN RE INVESTIGATION OF AN ACCIDENT WHICH OCCURRED ON THE PENNSYLVANIA RAILROAD, NEAR BIRMINGHAM, PA., FEBRUARY 4TH, 1919.

March 13, 1919.

On February 4th, 1919, there was a derailment of a freight train on the Pennsylvania Railroad near Birmingham, Pa., fouling adjoining tracks and causing the derailment of a passenger train which collided with the wreckage a few seconds later, resulting in the death of 3 employees and the injury of 1 passenger. After investigation the Chief of the Bureau of Safety reports as follows:

The Middle Division of the Pennsylvania Railroad extends between Altoona, Pa., and Harrisburg, Pa., Birmingham being located 114 miles west of Harrisburg. At this point the Pennsylvania Railroad is a 3-track line, trains being operated by time table and train orders, supplemented by an automatic block signal system, with blocks approximately 1 mile long. Beginning on the south, the tracks are numbered one, two and three, track No. 1 being used for eastbound traffic, track No. 3 for westbound traffic, while the middle or No. 2 track is used for both eastbound and westbound traffic. Between "QY" Block Station, 3.1 miles east of Birmingham, and "FR" Block Station, 1.5 miles west of Birmingham, tracks 1 and 3 are protected by automatic signals, while No. 2 track is operated as one block, 4.6 miles in length, and movements are protected by the controlled manual block system.

Proceeding eastward from a point just west of Birmingham depot, the track is tangent for a distance of 1,695 feet, followed by a 2° curve to the right 808 feet long, then tangent track for 872 feet, then a 6° curve to the left 895 feet long, which terminates at the western end of Bridge 218-71, the point where the passenger train collided with wreckage from the derailed freight train. In this distance the grade is descending, varying from .32% at Birmingham to .56% at Bridge 218-71. Proceeding westward from Shoenberger depot there is a 35' curve to the right 640 feet long, 940 feet of tangent, a 6° curve to the left 431 feet long, followed by a tangent 376 feet long extending across Bridge 218-71. The grade for this distance is ascending, varying from .40% to .56% at the point of accident.

The trains involved in this accident were westbound freight Extra 734, en route from Enola, Pa., to Altoona, Pa., and eastbound passenger train No. 18, en route from Pittsburgh to New York. The freight train was running on track 2 and the passenger train on track 1.

Extra 734 consisted of engine 734, 100 empty freight cars and a caboose, in charge of Conductor Cummings and Engineman Nissley. It left Enola at 9.20 a. m., and at Lewistown Junction the first three cars were set off; when between Spruce Creek and Union Furnace, helper engine 2060, in charge of Engineman Moore, was coupled to the rear of the train while moving, without connecting up the air. The train passed "QY" Block Station, 3 miles from Birmingham,

at 9.00 p. m., and when engine 734 reached a point approximately 600 feet east of Birmingham Station, and while travelling at an estimated speed of 10 miles an hour, the train parted between the 5th and 6th cars from the head end. This caused an emergency application of the air and the train buckled, resulting in the wrecking of 6 cars, the 66th to the 71st inclusive, the wreckage fouling tracks 1 and 3.

Train No. 18 consisted of engine 3380, 3 milk cars, 6 express cars, 3 postal cars and 2 coaches and was in charge of Conductor Fields and Engineman Sandoe. This train left Altoona at 8.49 p. m., 9 minutes late, passed "FR" Block Station, the last telegraph station west of the point of accident, at 9.09 p. m., 9 minutes late, and collided with the wreckage of extra 734 at 9.12 p. m., while running at a speed of approximately 40 or 45 miles an hour. The weather was clear.

Engine 3380 was thrown over the side of the bridge and came to rest on the east bank of the river, about 35 feet below, on its left side, headed west. The first 7 cars of train No. 18 were derailed but remained in an upright position, the head of the train being across the bridge 5 car lengths. Engineman Sandoe and Firemen McCue and Hyle of train No. 18 were killed.

Conductor Cummings of Extra 734 stated that he was riding in the cupola of the caboose, the speed being about 10 miles an hour, when he heard a crash at the head end and thought an air hose had burst; the train stopped within 3

or 4 car lengths. With the rear brakeman, he got out of the caboose and instructed the brakeman to protect all tracks while he went toward the front end of the train. He met Conductor Fields, of train No. 18, who informed him of the accident, and later he saw his engineman, who told him that the knuckle on the coupler of the 5th car had broken. After the accident he and the assistant superintendent inspected and measured this knuckle; he said it was an old one and they discovered some play in it.

Engineman Nissley of Extra 734 stated that his train was proceeding at about 10 miles an hour, and train No. 18 had entirely passed his engine, when he got an emergency application as though an air hose had burst or the train had parted. He said he felt a slight surge in the engine, but no jar and his train moved about 4 or 5 feet afterwards. He instructed his front brakeman to go back and see what the trouble was. The brakeman did so, but stopped at the rear of the 5th car, worked there a few minutes, then gave him a back-up signal in order to make the coupling. After one or two ineffectual attempts to make the coupling, the engineman got off the engine with a fusee and flagged passenger train No. 10, which was approaching from the west, as he did not know whether or not any of the cars in his train had been derailed.

Fireman Lane of Extra 734 stated that train No. 18 had passed his train before it had separated; he was firing at

the time and did not notice the jar. The speed was about 10 miles an hour.

Engineman Moore, of helper engine 2060, stated that he coupled to extra 734 between Spruce Creek and Union Furnace without the air being coupled up. He said he was working his engine with the lever in the 16th notch of the quadrant with a full throttle and the train was moving about 10 or 12 miles an hour when there was a sudden stop and the shock raised him off his seat. He thought an air hose had burst, as he did not feel the brakes applying until they received the sudden jar, and his engine did not move over a car length. He said that in previous instances where air hose had burst the stop was a gradual one, but in this case the train did not drag. The conductor came back and told him that the train had parted at about the 5th car and that the pusher engine had shoved the slack up and buckled the cars, but the engineman said had the slack been shoved up on the train he thought the stop would have been a more gradual one. He said that when operating his engine as a pusher, when he feels the train ahead of him slowing up, it is his practice to ease off the throttle until he comes to a dead stop in order to avoid separating the train and he did so in this instance.

Head Brakeman Lentz of Extra 734 stated that train No. 18 passed them while they were in motion; he was on the tender getting down coal for the fireman when the air brakes applied. He said there was no great jar, but the air seemed

to go on steadily and the engine moved about a car length before coming to a stop. The engineman instructed him to go back and investigate, so he went back and at the 5th car found the loose knuckle. He gave the engineman a signal to back up in an effort to make a coupling, but in the meantime the engineman came back and examined the coupler and succeeded in getting it to couple, although there was some play in it. The engineman then told him to go back farther, so he went toward the rear of the train, where Conductor Fields told him of the wreck.

Middle Brakeman Baker of Extra 734 stated that he was riding in the caboose. The speed was about 10 or 12 miles an hour when there was a sudden stop and the helper engine immediately shut off steam.

Rear Brakeman Murray of Extra 734 stated that he was in the caboose and the speed was 10 or 12 miles an hour when there was a sudden shock, as though the brakes had applied in emergency; about 30 seconds later he thought he heard the passenger train coming and very shortly afterward he heard a crash. His impression was that the helper engine continued to use steam for a short period after the brakes applied.

Conductor Fields of train No. 18 estimated the speed of his train approaching the point of accident at 40 miles an hour. He was in the rear coach, making out his passenger reports when there was a sudden hard crash and with the

brakeman he started forward to learn the cause of their stopping and found the wreckage on No. 2 track.

Brakeman Andrews of train No. 18 stated he was in the rear car when there was a severe shock and sudden stop, which threw him against the side of the car. He immediately started back to flag.

Head Brakeman Hollinger estimated the speed of his train before the accident at 40 miles an hour. He was in the smoking car and the shock threw him off his feet and put out his lanterns. He had noticed Extra 734 passing on track No. 2 shortly before the collision.

The direct cause of this accident was the parting of train extra 734 between the 5th and 6th cars from the head end, due to a worn knuckle lock, and the resultant buckling of the train between the 65th and 71st cars, the wreckage fouling track No. 1, on which train No. 18 was then approaching. Investigation indicated clearly that this accident was unavoidable; train No. 18 had passed engine 734 just prior to the parting of that train and no warning could be given to Engineman Sandoe of train No. 18.

An examination of the coupler on the 5th car showed that a small part of the knuckle lock had been broken off and in addition the knuckle pin was small and the hole in knuckle was worn to an elongated shape; these defects rendered the coupler about 5/8 of an inch out of contour. The coupler on the adjacent car had a bent knuckle pin and the tail of the knuckle was worn to the extent that it was

about 1/2 inch out of contour. These defects would not have been disclosed by an ordinary inspection.

The crew of extra 734 had been on duty about 13 hours and 27 minutes after varying periods off duty ranging from 14 to 17 hours. The engineman and fireman of pusher engine 2060 had been on duty 2 hours and 42 minutes after rest periods of 37 and 10 hours respectively. The engine crew of train No. 18 had been on duty 1 hour and 37 minutes after rest periods of 36 hours in the case of the engineman, and 56 hours in the case of the fireman, while the train crew had been on duty approximately 8 hours, after periods off duty of over 36 hours.

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